





# Efficacy and safety of cryoisolation of pulmonary veins – a single-center retrospective analysis

 **Katica Cvitkušić Lukenda**<sup>1,2,3\*</sup>,  
 **Ivan Bitunjac**<sup>1</sup>,  
 **Jelena Jakab**<sup>3</sup>,  
 **Blaženka Miškić**<sup>1,3</sup>,  
 **Vedran Velagić**<sup>4</sup>

<sup>1</sup>General Hospital "Dr. Josip Benčević", Slavonski Brod, Croatia

<sup>2</sup>Josip Juraj Strossmayer University of Osijek, University Postgraduate Interdisciplinary Doctoral Study Programme in Molecular Biosciences, Osijek, Croatia

<sup>3</sup>Josip Juraj Strossmayer University of Osijek, Faculty of Dental Medicine and Health, Osijek, Croatia

<sup>4</sup>University of Zagreb School of Medicine, University Hospital Centre Zagreb, Zagreb, Croatia

**KEYWORDS:** atrial fibrillation, pulmonary veins cryoisolation.

**CITATION:** *Cardiol Croat.* 2022;17(9-10):173. | <https://doi.org/10.15836/ccar2022.173>

**\*ADDRESS FOR CORRESPONDENCE:** Katica Cvitkušić Lukenda, Opća bolnica "Dr. Josip Benčević" Slavonski Brod, Andrije Štampara 42, HR-35000 Slavonski Brod, Croatia. / Phone: +385-98-556-576 / E-mail: [kclukenda@gmail.com](mailto:kclukenda@gmail.com)

**ORCID:** Katica Cvitkušić Lukenda, <https://orcid.org/0000-0001-6188-0708> • Ivan Bitunjac, <https://orcid.org/0000-0002-4396-6628> • Jelena Jakab, <https://orcid.org/0000-0002-5023-4409> • Blaženka Miškić, <https://orcid.org/0000-0001-6568-3306> • Vedran Velagić, <https://orcid.org/0000-0001-5425-5840>

**Introduction:** Atrial fibrillation (AF) is the most common cardiac arrhythmia associated with increased risk of stroke, heart failure, and death. The accepted method for invasive treatment of arrhythmia is pulmonary vein isolation (PVI), either by a point-by-point radiofrequency method or cryoisolation with a cryoballoon.<sup>1,2</sup> We performed a retrospective analysis of patients who underwent pulmonary vein cryoisolation at the General Hospital "Dr. Josip Benčević" in Slavonski Brod. The primary objective of the study was to determine the efficacy and safety of the procedure 12-month after cryoisolation.

**Patients and Methods:** We used data from the registry of patients who underwent cryoballoon PVI at the General Hospital "Dr. Josip Benčević", data from medical documentation, and data from the hospital information system. Subjects were followed up at three time points: 1, 3, and 12 months after the procedure. An ECG was recorded each time, and a 24-hour Holter ECG was recorded at the third follow-up. Echocardiographic parameters were measured before the procedure.

**Results:** Data were collected from 89 patients. The mean age was 62 years, and 54 (60.7%) of the patients were men. According to the type of AF, the persistent form was present in 38 (42.7%) patients, of which 24 (63.2%) were in male patients. The most common comorbidities were arterial hypertension in 75 (84.2%) patients and dyslipidemia in 52 (58.4%) patients. Heart failure associated with tachyarrhythmia was present in 25 (28.1%) patients. Diabetes was present in 11 (12.4%) patients. The mean CHA<sub>2</sub>DS<sub>2</sub>-VASc score was 2. The mean left atrial diameter was 52 mm. 53 (82.8%) patients were free of AF 12 months after the procedure. Of the 12 (17.2%) patients who experienced a recurrence of AF, 2 (16.7%) were hospitalized for heart failure associated with tachyarrhythmia. The median time to recurrence of AF was 7 months, IQR 8 (5-13). No bleeding, TIA/CVI, or death from any cause was recorded.

**Conclusion:** In this single-center retrospective analysis, pulmonary vein cryoisolation is an effective and safe method for maintaining sinus rhythm 12 months after the procedure in patients with symptomatic paroxysmal and persistent AF.

RECEIVED:  
November 4, 2022

ACCEPTED:  
November 10, 2022



## LITERATURE

1. Packer DL, Mark DB, Robb RA, Monahan KH, Bahnon TD, Poole JE, et al; CABANA Investigators. Effect of Catheter Ablation vs Antiarrhythmic Drug Therapy on Mortality, Stroke, Bleeding, and Cardiac Arrest Among Patients With Atrial Fibrillation: The CABANA Randomized Clinical Trial. *JAMA.* 2019 Apr 2;321(13):1261-1274. <https://doi.org/10.1001/jama.2019.0693>
2. Choi JH, Park SJ, Park KM, Kim JS, On YK. Efficacy and safety of cryoballoon pulmonary vein isolation for paroxysmal and persistent atrial fibrillation: A comparison with radiofrequency ablation. *PLoS One.* 2022 Jul 27;17(7):e0265482. <https://doi.org/10.1371/journal.pone.0265482>